

## Friction-Sensing Retroreflector Array Patches (FRAP), Phase I

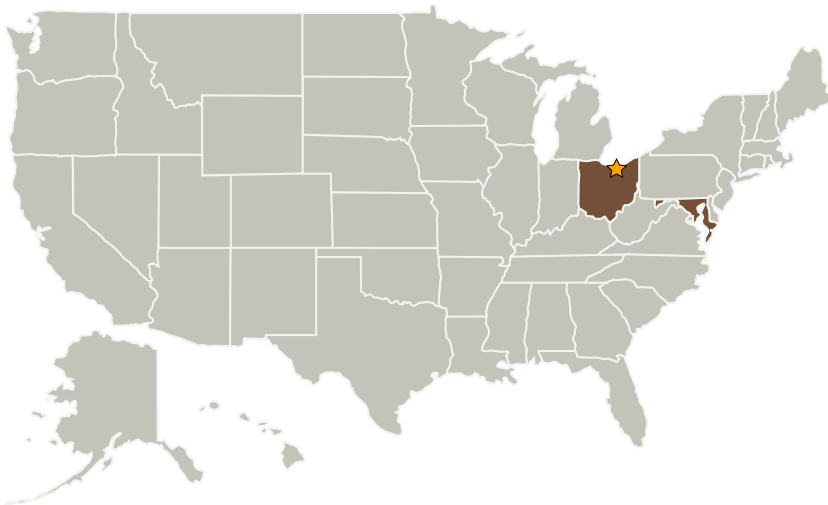
Completed Technology Project (2008 - 2008)



## Project Introduction

Research Support Instruments, Inc. (RSI) proposes to develop the Friction-Sensing Retroreflector Array Patches (FRAP), a technology that will measure the shear stress distribution on aerodynamic surfaces in ground test facilities with high resolution, sensitivity, and bandwidth. Unlike the oil-film interference method, FRAP patches will not be thinned as a function of time during a test. No knowledge of the streamlines of the flow will be needed in order to calculate the local stress distribution; this will avoid the tracers needed with the oil-film interference approach. Flexible patches of FRAP arrays, inexpensive due to simple, mass-production-compatible microfabrication techniques, will be interrogated using a light source and camera. FRAP will be independent of the flow species and applied as a very thin, flexible, adhesive material. The Phase I goals will be to design sensors, develop a microfabrication technique and use it to fabricate prototype units, demonstrate feasibility, and select the most promising design for Phase II development. In Phase II, the prototype units will be field-demonstrated at NASA facilities, with manufacturing issues and realistic operating conditions addressed. The result will be a product that will address a critical NASA instrumentation need.

## Primary U.S. Work Locations and Key Partners



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## Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Organizational Responsibility	1
Project Management	2
Technology Areas	2

## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Center / Facility:

Glenn Research Center (GRC)

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Research Support Instruments, Inc.	Supporting Organization	Industry	Lanham, Maryland

## Primary U.S. Work Locations

Maryland	Ohio
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## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

**Principal Investigator:**

Jemma F Kline

## Technology Areas

**Primary:**

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - └ TX12.1 Materials
    - └ TX12.1.3 Flexible Material Systems